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WEBERA PROLIGERA IN AMESBURY, MASS.

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There is a small brook in this town about a mile in length, flowing through sandy land and emptying into the Merrimac river. For some distance from the head of this stream the banks are covered with various mosses, but I have never found any of the *Webera* group; the brook is then joined by another rivulet which has cut for itself a channel in the live sand some thirty feet in depth. These banks of wet sand are densely covered with *Webera proligera* (Lind) Kind. From this place on, both banks of the brook are covered with this moss, although hardly any fruit can be found anywhere. It is easy to see how this wonderful multiplication is brought about, for in the autumn one can find plenty of the peculiar bulbils which grow on the stem of this moss near its apex, but in the spring these growths are mostly gone. In the winter season the banks are covered with ice and snow and deposit them in the mud further down, thus producing plants all along.—*J. W. Huntington in Rhodora for April, 1901.*

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In the Journal of the New York Botanical Garden for May, 1901, Mrs. Britton has a very interesting note on *Physcomitrium turbinatum* and its variations. Plants grown from earth potted in September in comparative darkness in the green houses with steam pipes overhead, matured capsules by January but the plants were small with setae about one cm. long. In January the pots were removed to more favorable positions with bottom heat and more light when spores from the same pots and undoubtedly of the same kind, developed plants with setae twice as long, of a lighter color, and with smaller and more turbinate capsules. These last in every way resembled the Louisiana specimens which have been called var. *Langloisii* R. & C. The roughness of the spore, the amount of thickening of the elongated cells around the mouth, the shape of the capsules and the amount of contraction below the mouth when, were all found to be dependent upon the stage of development reached by the plants before becoming dry and shrivelled. "So that the amount of rain in spring would alter and control these characters and cause considerable variation, even in the same patch." As these are just the characters upon which many varietal and specific distinctions are based, it is easy to see the importance of Mrs. Britton's observations. *A. J. G.*

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NOTES ON RARE AND LITTLE KNOWN MOSSES.

BY J. M. HOLZINGER.

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*DITRICHUM ELATUM* Kindb. For years I have collected near Winona a sterile moss the generic relationship of which I could not satisfactorily determine. Not more successful were several of my bryological friends to whom I submitted it. To Mr. W. C. Nicholson is due the credit of placing it in the vicinity of *Ditrichum flexicaule densum* (Schimp.). There-

upon Dr. Best (who ought to have written this note) suggested that it might be *Ditrichum elatum* Kindb. And when I submitted the Minnesota plant to Dr. Kindberg, he very kindly looked it over, and recognized it as identical with his species. Subsequently, in an effort to determine the distinctive features of *Ditrichum flexicaule densum*, *D. flexicaule brevifolium* (= *D. elatum*), and *D. Macounii*, I received the following materials:

1. From Dr. Kindberg: *Ditrichum elatum* Kindberg, collected by J. Macoun at Devil's Lake, Canada, in 1891.

2. From the Columbia University Herbarium, through the courtesy of Mrs. E. G. Britton: *Ditrichum flexicaule densum*, from the following stations:

a. Switzerland, Jaeger, 1866;

b. Belgium, Gravet, 1875;

c. "Bärwalde," Ruthe;

d. Schwarzwald, Zickendrath, 1868;

e. Sweden, Schentz;

f. Scotland, Fowler, 1872;

g. *Ditrichum Macounii* Kindb., from British Columbia. Macoun, 1890.

3. From Mr. R. S. Williams: *Ditrichum flexicaule densum* (B. & S.) Braith, collected by him in 1898, in the Yukon region.

3. From the National Herbarium, through the courtesy of Dr. J. N. Rose: *Ditrichum flexicaule densum*, from—

a. Norway, Hagen, 1887.

b. Mt. Benson, Vancouver Island, Macoun (Can. Musc. 461).

c. *Ditrichum flexicaule brevifolium* Kindb. From Devil's Lake, Rocky Mts., Macoun, 1891.

4. From Mr. Jules Cardot: two plants, both from France, one coll. Cardot, 1883; the other coll. Madiot, 1882.

5. From Mr. W. E. Nicholson: two English plants; one coll. near Pecca Falls, H. N. Dixon, 1886; the other, from Northamptonshire, H. N. Dixon ("teste Braithwaite"), 1886.

6. In my own herbarium, I find *Ditrichum flexicaule densum*, from Germany, Schemmann, 1895; also from Norway, Dixon & Nicholson, 1900.

In a considerable series of *Ditrichum flexicaule*, the species in my herbarium, I find quite a variation, both toward the var. *longifolium*, and toward the var. *densum*. It is the latter forms alone that concern us here. Of these I select the following two,

1. Dr. Bryhn's plant, cfr., from Norway, June, 1900:

2. Mr. Jensen's plant, from Denmark, September, 1882.

These two plants are increasingly smaller than typical forms of the species. They also have increasingly smaller leaves.

Jensen's plant yields little, if anything, in both size and appearance to Canadian Musci 461; and Bryhn's plant stands squarely between these and the true species. And, with hardly an exception, the other plants cited above are smaller, in more dense cushions, with variously shortened leaf apex, and young shoots vigorous or slender, according to climatic conditions,

I find only two pronounced extremes in this reduction from the species. One of these is the variety *densum*, with longer leaf points; the larger forms of this occur all over Europe, and in North America; the slender forms include Fowler's plant from Scotland, Williams' from the Yukon region, and *Ditrichum Macounii*. The other of them is not so common, but occurs in England, in Northamptonshire, coll. Dixon ("teste Braithw."), in Canada, Rocky Mts. (*D. flexicaule brevifolium* = *D. elatum* Kindb), and abundantly in the upper Mississippi valley. It seems to me that Dr. Kindberg's first name *Ditrichum flexicaule brevifolium*, very appropriate for this short-leaved form, should stand. But I hardly think that either *D. elatum* or *D. Macounii*, will eventually stand as different species.

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### CLIMACIUM WEB. & MOHR. ITER SUEC. 96. 1804.

Large handsome mosses with a tree-like habit of growth from underground creeping stems (Fig. 1. a). Sometimes prostrate, or floating in very wet places. Stem and branches-bearing paraphyllia (*i. e.* branching filaments which are chlorophyll-bearing). The leaves are arranged evenly on all sides of the stems and branches and are all somewhat decurrent but vary greatly in shape and structure. The leaves figured are from the middle of well developed branches. The leaves of the main upright stems are very large, thin, with little chlorophyll, closely imbricated and clasping. Branch leaves smaller, of a different shape and texture, chlorophyllose. All our species are dioicous. The seta is long and smooth, twisted to the right when dry. Calyptra split on one side, long, reaching to the base of the capsule. Capsule erect, cylindric; operculum conic-rostate with the beak often oblique; annulus none; peristome double; teeth linear-lanceolate, very long, closely articulate, minutely papillose, without the fine transverse lines on the lower part of the teeth that characterize the Hypnaceae; segments as long as the teeth, keeled, split between the articulations, often split to the apex when old, united at the base into a continuous narrow basal membrane, minutely papillose; spores minutely papillose.

Mosses of swampy woods and fields; fruiting with comparative infrequency. The systematic position of this genus is as yet undetermined. It certainly does not belong in the Isoeteciae where it has previously been placed. The lack of transverse lines on the peristome teeth indicates that it is either not closely related to the Hypnaceae or else is a very highly modified member of that family. It has been placed with the Fontinalaceae but there is much to be said against this view. Perhaps a separate subfamily Climaceae of the Hypnaceae will be as satisfactory arrangement as can be made with our present knowledge. There are three species known to North America, one of which, *C. dendroides*, is common in Europe.

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| 1. Capsules 3 to 4 times as long as broad; median leaf cells |                        |
| 10 times as long as broad,                                   | <i>C. dendroides</i> . |
| Capsules 5-6: 1; median leaf cells 2-7: 1,                   | 2.                     |